1. Legend and Overlay Management.

1.1. Legend collapse controls.

Ex 1.1.A.
- Open VB.
- Choose SREF-21 source from Local, 500MB, height.
- Load it up.
- Note that there is only one legend, and that is has a plus sign on the left end.
- Click on the plus sign with left mouse button, note that a legend appears for each ensemble member.

Ex 1.1.B.
- Click on one minus sign with middle mouse button, note this collapses a group of similarily colored overlays.
- Click on another minus sign with left button, note this collapses all legends again.
- Click on plus sign with middle button, note this shows all groups but leaves the groups collapsed.
- Click on any plus sign with middle button, note this expands that group.
- Click on any plus sign with left button, note this expands all legends again.
- Experiment freely for a bit with the collapse controls.

1.3. Toggling.

Ex 1.3.A.
- With SREF 500MB heights loaded, expand the legend.
- Click twice on any legend (not on collapse marker) with right mouse button, note that all legends toggle off and on.
- Click twice on any legend with middle button, note that a group of legends toggles off and on.
- Click twice on any legend with left button, note that one legend toggles off and on.
- Completely collapse legend, repeat last three steps, note the behavior is now the same for all buttons.

Ex 1.3.B.
- With legend completely collaped, click with middle button on collapse marker.
- Click twice on any legend (not on collapse marker) with right button.
- Click twice on any legend with middle button.
- Click twice on any legend with left button.

1.5. Hiding empty overlay legends.

Ex 1.5.A.
 - See to it the SREF 500MB heights are completely expanded.
 - Use the left button to toggle one overlay off.
 - Use third button popup on a different overlay to change the
   density to zero.
 - Use third button pop-up over display area away from legends
   to choose the Hide Empty Legends option.
 - Note the toggled off and zero density legends disappear, and the
   small gray "more" appears on top of the legend.

Ex 1.5.B.
 - Click on the "more" text, note the empty overlay legends come back.
 - Hit the keypad enter key several times. Note that hiding empty
   legends is now one of the states it cycles to.

1.6. New legend related keyboard controls.

Ex 1.6.A.
 - Clear and load SREF Surface Wind Speed from VB.
 - Click on the D-2D title bar to get focus.
 - Hit the > key a few times, note the density increases.
 - Hit the < key a few times, note the density decreases.
 - Adjust the density so some but not many contours are visible.

Ex 1.6.C.
 - Hit the + (plus) key on the main key board. Note that this toggles
   first overlay off.
 - Continue to hit the + key, note that this rotates the toggle state
   upward through the legend stack.
 - Hit the - (minus) key a few times, note that this rotates the toggle
   state downward.

Ex 1.6.D.
 - Toggle all overlays off with the third button.
 - Toggle one group on with the middle button.
 - Use the + and - keys, note that now the legends are rotated by group.

2. Function Overlays.

  2.1. Basic Concept.

  Ex 2.1.A.
   - Clear, load SREF Surface Temperature.
   - From Volume menu, open and tear away Function Overlays menu.
   - Click on the D-2D title bar to get keyboard focus, hit the < key
     once to get zero density.
   - Select Mean from the top part of the Function Overlays menu.
   - Turn on loop, see a loop of the mean value among the members
     of surface temperature.

  Ex 2.1.B.
   - Expand the legends, toggle off a couple of groups.
   - Select the Mean Function Overlay again.
   - Note that the result is slightly different; this is because the
     toggled off members were excluded fron the computation.

  Ex 2.1.C.
   - Switch VB to Time Series major mode, and load up the SREF
     surface temperature.
   - Use the third button popup to change the line style to dotted.
   - Load Mean, Max, Min, and Median, note these work for line graphs
     as well as plan view.

  Ex 2.1.D.
   - Clear, switch VB back to Plan View major mode.
   - Select RUC80 500MB height in the VB, but do not load it yet.
   - Change load mode to Seq Ensemble (last on list).
   - Load it up, note that every run loads as a separate overlay.
   - Turn looping on, load Mean Function Overlay.
   - Use third button pop-up on legend for Mean Function Overlay to
     load that as an image.

2.5. Parametric Functions.

Ex 2.5.A.
- Load SREF Surface 6HR precip, get keyboard focus, and hit < once to
  make overlays empty.
- Open Ensemble Controls tool.
- In the first minimum field, click the cursor in there, clear it
  out, type in 0.03, and hit return.
- If the first maximum field is not empty, clear it out and hit return.
- Choose the Ens Rel Freq Function Overlay in the Images section.

Ex 2.5.B.
- Toggle off the Ens Rel Freq image overlay.
- Erase 0.03 from first minimum field in Ensemble Controls tool,
  replace it with 50, and hit return.
- Load Value of Ens Rel Freq Function Overlay from top section.
- Load Median Function Overlay from top section, note how they
  compare.

2.7. Histogram overlays.

Ex 2.7.A.
- Load Color Histogram Function Overlay.
- Start sampling.
- If it is difficult finding non-trivial histograms, try toggling
  back on the Ens Rel Freq image overlay.

Ex 2.7.B.
- Use third button pop-up over display area (not over legend) to
  activate continuous sampling.
- Put cursor over somewhere with a non-trivial histogram.
- Start hitting the + key, note what happens in the histogram.
- If this is puzzling, expand the legends and keep hitting the + key.

2.9. Recomputing Function Overlays.

Ex 2.9.A.
- Clear, load up SREF 500MB Windspeed.
- Open Ensemble Controls tool.
- Enter 50 in the first minimum field and hit return, making sure
  first maximum is empty.
- Load Ens Rel Freq Function Overlay.
- In Ensemble Controls tool, change 50 to 75.
- Double click on Ens Rel Freq legend, note that it recomputes with
  the new parameter.

2.10. Multi-loads and Function Overlays.

Ex 2.10.A.
- Toggle off Ens Rel Freq Overlay.
- Load 10/Median/90. Note that this is three overlays; the value
  for ensemble relative frequencies of 10, 50, and 90 percent.

Ex 2.10.B.
- Clear the screen, turn on looping.
- Select the Fire Wx item on the very bottom of the Function Overlay menu.

Exercises on weight manipulation in D-2D.

  2.8. Assigning weights to ensemble members.

 Ex 2.8.A.
  - Clear screen.
  - Open Ensemble Controls tool.
  - Make sure Use Weights option button is on.
  - Load SREF Surface Temperature, get keyboard focus, hit < key
    to zero density.
  - Open the Edit Weights tool.
  - Make all the weights 100 except make two of them 0, Publish.

 Ex 2.8.B.
  - Load Sample Weights function overlay.
  - Sample, note that weights shown should be consistent with weights
    entered.
  - Load Mean function overlay.

 Ex 2.8.C.
  - In Ensemble Controls tool turn Use Weights option button off.
  - Expand the legends for Surface Temperatures, toggle off same members
    that the weights were set to zero for.
  - Load Mean function overlay again, note that the two versions of
    the mean function overlays should be the same.

 Ex 2.8.D.
  - Turn Use Weights option button on in Ensemble Controls.
  - Change some of the weights, publish.
  - Double click on one of the Mean function overlays, note that it
    should now be different from the other.